[Received by the International Bureau on 31 May 2005 (31.05.2005); original claims 1-11 replaced by amended claims 1-10 (2 pages)]

Claims

1. Force sensor (1) including a support (2) of two arms carrying an longitudinal electromechanical element (3), which electric properties are changeable by a mechanical deformation (Δx) due to a force (F);
characterised in that
the electromechanical element is a nanostructure (3) and an actuator is provided in order to transmit a force (F) to the nanostructure (3).

2. Force sensor (1) according to claim 1;
characterised in that
the nanostructure (3) is either a nanotube or a carbon nanotube or bor-nitride nanotubes or a quasi one-dimensional (1D) nanostructure.

3. Force sensor (1) according to claim 1 or 2;
characterised in that
the changeable electric property is the conductance.

4. Force sensor (1) according to anyone of the claims 1 to 3;
characterised in that
the support (2) is U-shaped.

5. Force sensor (1) according to anyone of the claims 1 to 4;
characterised in that
each arm (2) is provided with a cusp (5), on which the nanostructure (3) is mounted.

6. Force sensor (1) according to anyone of the claims 1 to 5;
characterised in that
a movable mass (7, m) provided with a tip (11) is arranged between the arms (4), where the mass (7) is movable due to an acting acceleration (a) and due to the resulting force (F) the tip (11) acts on the nanostructure (3).

7. Force sensor (1) according to anyone of the claims 1 to 6;
characterised in that
a second nanostructure (10) is carried by the arms (4) in order to compensate environmental effects.

8. Force sensor (1) according to claim 7;
characterised in that
each arm (2) is provided with a further cusp (5), on which the second nanostructure (10) is mounted.

9. Force sensor (1) according to claim 8;
characterised in that
each arm (2) is provided with an insulation (9) in order to electrically separate the nanostructure (3, 10).

10.Force sensor (1) according to anyone of the claims 7 to 9;
characterised in that
the second nanostructure (10) is either a nanotube or a carbon nanotube or a quasi one-dimensional nanostructure.